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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/560,465	03/31/2006	Gerhard Breuer	BREUER GET AL-2 (PCT)	3098
25889 7590 02/19/2009 COLLARD & ROE, P.C. 1077 NORTHERN BOULEVARD ROSLYN, NY 11576				
EXAMINER DWIVEDI, VIKANSHA S				
ART UNIT 3741		PAPER NUMBER		
MAIL DATE 02/19/2009		DELIVERY MODE PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/560,465

**Applicant(s)**

BREUER ET AL.

**Examiner**

VIKANSHA S. DWIVEDI

**Art Unit**

3741

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 22 October 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 14-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 14-21 and 24-27 is/are rejected.
- 7) ☒ Claim(s) 22 and 23 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-8508)
- Paper No(s)/Mail Date \_\_\_\_\_

- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 14-21, 24, 25, 26 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Streicher (U. S. Patent number 6,139,284) in view of Baumann (U. S. Patent number 5,033,940).

Streicher discloses a radial piston pump (Figure 1 and 2) for high-pressure fuel generation in fuel injection systems of internal combustion engines, in particular in a common rail injection system (Col. 3 ll. 1-8), having a drive shaft (4) which is mounted

in a pump casing (Shown in figure 2) and has an eccentric shaft section (6) on which a running roller (8) is mounted, and having preferably a plurality of pistons (10), which are arranged in a respective cylinder (12) radially with respect to the drive shaft (4) and each have a piston footplate (16), which makes contact with the circumferential surface (Figure 2, not numbered but clearly shown) of the running roller (8), at their ends facing the running roller (8), wherein surface of the piston footplate (16) which is in contact with the circumferential surface (Figure 2, not numbered but clearly shown) of the running roller (8) has at least one insert (Figure 2, not numbered but clearly shown next to 6 and 16). Streicher discloses a radial piston pump and other limitations of the claimed invention except the type of material being used to make the parts of the pump. Baumann teaches a piston and a cylinder liner each made of wear-resistant metal or ceramic material. Baumann teaches that the piston 8 and the liner 26 are both made of a wear-resistant material. In the construction shown in Baumann, the piston 8 is made of hard metal and the liner 26 of a correspondingly wear-resistant ceramic substance, such as silicon carbide or silicon nitride, whose heat expansion coefficient corresponds at least substantially to the heat expansion coefficient of the material used for the piston 8. Consequently, when the dry-running parts heat up in operation, the required clearance between the piston 8 and the liner 26 and, therefore, the leakage loss determined by such clearance, remain substantially constant over the entire range of operating temperatures. Baumann also teaches that the piston 8 can have a relatively soft core and a coating therearound of hard metal or of a corresponding wear-resistant material or can be made of a ceramic material. Also, it may be

convenient for the liner 26 to be made of hard metal. Similarly, the piston 8 and/or the liner 26 can be made of materials other than those described, for example, metal compounds having appropriate coefficients of heat expansion. Furthermore, at least one of the running surfaces of the piston 8 and of the cylinder liner 26 can be made of a thin, homogeneous layer of amorphous diamond-like carbon. Such layers can be applied on the concerning part or on both parts, respectively, at a slight cost, by a method suitable for mass production, and at a relatively low treating temperature, for example about 200.degree C, which is easy on the supporting material. If the heat expansion coefficient of the material used for the cylinder 30 is at least substantially the same as the heat expansion coefficient of the material used for the piston 8, a construction is possible in which such a layer is applied directly on the cylinder bore the surfaces of the metallic components that rest against each other in a sealed fashion are machined, in particular lapped, in order to produce a desired surface roughness. It would have been obvious to one of ordinary skill in the art at the time of invention to modify Streicher in view of Baumann to lower the costs and mass produce the radial piston pump (Baumann).

With regard to claim 24 Streicher in view of Baumann does not teach surface roughness between 0.15 and 2 micrometer. Streicher in view of Baumann discloses the general conditions of the claimed invention except for the express disclosure of roughness between 0.15 and 2 micrometer and porosity of less than 5%. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have surface roughness between 0.15 and 2 micrometer and porosity of less than

5%, since the claimed values are merely an optimum or workable range. It has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art.

With regard to claim limitation "such as" it should be clear that the phrase "such as" renders the claim indefinite since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired.

With regard to product by process claim 27 and claim 26 limitation "piston is produced by extrusion" the determination of patentability in a product-by-process claim is based on the product itself, even though the claim may be limited and defined by the process. That is, the product in such a claim is unpatentable if it is the same as or obvious from the product of the prior art, even if the prior product was made by a different process. A product-by-process limitation adds no patentable distinction to the claim, and is unpatentable if the claimed product is the same as a product of the prior art. Prior art discloses a radial piston pump as claimed and the piston therein therefore the limitation of piston being isostatically extruded and sintered adds no patentable distinction to the claim.

With regard to claim 26, claim limitation "piston surface being infiltrated with molybdenum di-sulphide, it should be noted that  $\text{MoS}_2$  with particle sizes in the range of 1-100  $\mu\text{m}$  is a common dry lubricant. It is widely used as a solid lubricant due to its low friction properties, sometimes to relatively high temperatures, is unreactive, being unaffected by dilute acids.

### ***Claim Objections***

Claims 22 and 23 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

### ***Response to Arguments***

Applicant's arguments filed 10/22/2008 have been fully considered but they are not persuasive. Streicher discloses a radial piston pump (Figure 1 and 2) for high-pressure fuel generation in fuel injection systems of internal combustion engines, in particular in a common rail injection system (Col. 3 ll. 1-8), having a drive shaft (4) which is mounted in a pump casing (Shown in figure 2) and has an eccentric shaft section (6) on which a running roller (8) is mounted, and having preferably a plurality of pistons (10), which are arranged in a respective cylinder (12) radially with respect to the drive shaft (4) and each have a piston footplate (16), which makes contact with the circumferential surface (Figure 2, not numbered but clearly shown) of the running roller (8), at their ends facing the running roller (8), wherein surface of the **piston footplate (16) which is in contact with the circumferential surface (Figure 2, not numbered but clearly shown) of the running roller (8) has at least one insert (Figure 2, not numbered but clearly shown next to 6 and 16).**

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to VIKANSHA S. DWIVEDI whose telephone number is (571)272-7834. The examiner can normally be reached on M-F, 8-4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, MICHAEL CUFF can be reached on 571-272-6778. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Vikansha S Dwivedi/  
Examiner, Art Unit 3741

/Michael Cuff/  
Supervisory Patent Examiner, Art Unit 3741